

1/23

BAL human cDNA

5'UTR:

GGGCTTCGTGTTCCCTGGGTGCTGACCGTGCCTCCCCGCCGCCGAGGACTTAGAGCTCTGGAAGT
AGCTCTCCAGCTTCCTTCGTACTCGGGGGCCGGAAGTGTACACCCGCACGAGGAGCGGGGACGGC
GGGCGCAGAAGTGGGCCACCATATCTGGAAACTACAGTCTATGCTTTGAAGCGCAAAGGGAATA
AACATTTAAAGACTCCCCCGGGGACCTGGAGG

Coding: alternatively spliced sequence in bold characters

ATGGACTTTTCCATGGTGGCCGGAGCAGCAGCTTACAATGAAAAATCAGGTAGGATTACCTCGCT
CTCACTCTTTGTTTCAGAAAGTCTTTGCTCAGATCTTTCTCAGTGGAGAAAGGGGAATACAG
AAGAATGTCTCCCTACAAGTGCTCAGAGACTGGTGCTCTTGGAGAAAACATAGTTGGCAAA
TCCCATTAACCACAATGACTTCAAAATTTTAAAAATAATGAGCGTCAGCTGTGTGAAGTCTTCCA
GAATAAGTTTGGCTGTATCTCTACCCTGGTCTCTCCAGTTTCAGGAAGGCAACAGCAAATCTCTGCA
AGTGTTTCAGAAAAATGCTGACTCCTAGGATAGAGTTATCAGTCTGGAAAGATGACCTCACCACAC
ATGCTGTTGATGCTGTGGTGAATGCAGCCAATGAAGATCTTCTGCATGGGGGAGGCTGGCCCTGG
CCCTGGTAAAAGCTGGTGGATTTGAAATCCAAGAAGAGAGCAAACAGTTTGTGTCAGATATGGT
AAAGTGTCAGCTGGTGAGATAGCTGTCACGGGAGCAGGGAGGCTTCCCTGCAAACAGATCATCCA
TGCTGTTGGGCTCGGTGGATGGAATGGGATAAACAGGGATGTACTGGAAAGCTGCAGAGGGCCA
TTGTAAGTATTCTGAATTATGTCATCTATAAAAAATACTCACATTAAGACAGTAGCAATTCCAGCCT
TGAGCTCTGGGATTTTTCAGTTCCCTCTGAATTTGTGTACAAAGACTATTGTAGAGACTATCCGGGT
TAGTTTGCAAGGGAAGCCAATGATGAGTAATTTGAAAGAAATTCACCTGGTGAGCAATGAGGACC
CTACTGTTGCTGCCTTTAAAGCTGCTTCAGAATTCATCCTAGGGAAGAGTGAGCTGGGACAAGAAA
CCACCCCTTCTTTCAATGCAATGGTCGTGAACAACCTGACCCTCCAGATTGTCCAGGGCCACATTG
AATGGCAGACGGCAGATGTAATTGTTAATTCTGTAAACCCACATGATATTACAGTTGGACCTGTGG
CAAAGTCAATTCTACAACAAGCAGGAGTTGAAATGAAATCGGAATTTCTTGCCACAAAGGCTAAA
CAGTTTCAACGGTCCCAGTTGGTACTGGTCACAAAAGGATTTAACTTGTTCGTGTAATATATATAC
CATGTACTGTGGCATTGAGAATTTCCCTAAACCTCAGATATTAACATGCAATGAAGGAGTGTGTTG
GAAAAATGCATTGAGCAAAATATAACTTCCATTTCTTTCTGCCCTTGGGACTGGAAACATGGAA
ATAAAGAAGGAAACAGCAGCAGAGATTTTGTGTTGATGAAGTTTAACTTTGCCAAAGACCATGT
AAAACACCAGTTAACTGTAAAATTTGTGATCTTTCCAACAGATTGAGGATATATAAGGCTTTTCAG
TTCTGAAATGGCAAAGAGGTCCAAGATGCTGAGTTTGAACAATTACAGTGTCCCCCAGTCAACCA
GAGAGGAGAAAAGAGAAAATGGGCTTGAAGCTAGATCTCCTGCCATCAATCTGATGGGATTC AAC
GTGGAAGAGATGTAGTGAGGCCCACGCATGGATCCAAAGAATCCTGAGTCTCCAGAACCACCACA
TCATTGAGAATAATCATATTCTGTACCTTGGGAGAAAGGAACATGACATTTTGTCTCAGCTTCAGA
AACTTCAAGTGTCTCCATCACAGAAATTATCAGCCCAGGAAGGACAGAGTTAGAGATTGAAGGA
GCCCGGGCTGACCTCATTGAGGTGGTTATGAACATTGAAGATATGCTTTGTAAAGTACAGGAGGA
AATGGCAAGGAAAAAGGAGCGAGGCCTTTGGCGCTCGTTAGGACAGTGGACTATTTCAGCAACAAA
AAACCCAAGACGAAATGAAAGAAAATATCATATTTCTGAAATGTCCTGTGCCTCCAACCTCAAGAG
CTTCTAGATCAAAAGAAACAGTTTGA AAAATGTGGTTTGCAGGTTCTAAAGGTGGAGAAGATAGA
CAATGAGGTCTTATGGCTGCCTTTCAAAGAAAGAAAGAAATGATGGAAGAAAACTGCACAGGC
AACCTGTGAGCCATAGGCTGTTTCAGCAAGTCCCATAACAGTTCTGCAATGTGGTATGCAGAGTTG
GCTTTCAAAGAAATGTA CTGACACCTTGCATCCAAAATACGGAGCTGGCATATACTTCACCAAGA
ACCTCAAAAACCTGGCAGAGAAGGCCAAGAAAATCTCTGCTGCAGATAAGCTGATCTATGTGTTT
GAGGCTGAAGTACTCACAGGCTTCTTCTGCCAGGGACATCCGTTAAATATTGTTCCCCCACCACCTG
AGTCCTGGAGCTATAGATGGTCATGACAGTGTGGTTGACAATGTCTCCAGCCCTGAAACCTTTGTT
ATTTTTAGTGGCATGCAGGCTATACCTCAGTATTTGTGGACATGCACCCAGGAATATGTACAGTCA
CAAGATTACTCATCAGGACCAATGAGACCCTTTGCACAGCATCCTTGGAGGGGATTTCGCAAGTGG
CAGCCCTGTTGATTAA

Fig. 1

2/23

3' UTR

TCTCTACATCATTTTAAACAGCTGGTATGGCCTTACCTTGGGTGAACTAACCAAATAATGACCATCG
ATGGCTCAAAGAGTGGCTTGAATATATCCCATGGGTATCTGTATGGACTGACTGGGTATTGAAA
GGACTAGCCACATACTAGCATCTTAGTGCCTTTATCTGTCTTTATGTCTTGGGGTTGGGGTAGGTAG
ATACCAAATGAAACACTTTTCAGGACCTTCCTTCCTCTTGCAGTTGTTCTTTAATCTCCTTTACTAGA
GGAGATAAATATTTTGCATATAATGAAGAAATTTTTCTAGTATATAACGCAGGCCTTTTATTTTCTA
AAATGATGATAGTATAAAAAATGTTAGGATAACAGAATGATTTTAGATTTTCCAGAGAATATTATAA
AGTGCTTTAGGTATGAAAATAAATCATCTTGTCTGATTAAAAA

BAL human protein: alternatively spliced (Bold characters)

MDFSMVAGAAAYNEK**SGRITSL****SLLFQKVFAQIFPQWRKGNT****ECLPYKC**SETGALGENYSW
QIPINHNDFKILKNNERQLCEVLQNKFGCISTLVSPVQEGNSKSLQVFRKMLTPRIELSVWKDDLTT
HAVDAVVNAANEDLLHGGGLALALVKAGGFEIQEESKQFVARYGKVSAGEIAVTGAGRLPCKQIIHAV
GPRWMEWDKQGCTGKLQRAIVSILNYVIYKNTHIKTVAI PALSSGIFQFPLNLCTKTIVETIRVSLQKPK
MMSNLKEIHLVSNEDPTVAAFKAASEFILGKSELGQETTPSFNAMVVNNLTQIVQGHIEWQTADVIVN
SVNPHDITVGPVAKSILQQAGVEMKSEFLATKAKQFQRSQVLVLTGKFNLFCKYIYHVLWHSEFPKPKQI
LKHAMKECLEKCIEQNITSISFPALGTGNMEIKKETAAEILFDEVLTFAKD
HVKHQLTVKFVIFPTDLEIYKAFSSEMAKRSKMLSLNNYSVPQSTREEKRENGLEARSPAINLMGFNVE
EMYEAHAWIQRILSLQNHIIENNHIYLGKREHDILSQLQKTSSVSITEIISPGRTELEIEGARADLIEVV
MNIEDMLCKVQEEMARKKERGLWRS LGQWTIQQKTQDEMKENIIFLKCPVPPTQELLDQKKQFEKC
GLQVLKVEKIDNEVLMAAFQKKKMMEEKLHRQPVSHRLFQQVPYQFCNVVCRVGFQFORMYSTPCDP
KYGAGIYFTKNLKNLAEKAKKISAADKLIYVFEEVLTGFFCQGHPLNIVPPPLSPGAIDGHDSVVDNVS
SPETFVIFSGMQAIPQYLWTCTQEYVQSQDYSSGPMRPFQAHPWRGFAFGSPVD

Fig. 1 (continued)

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BAL mouse cDNA:

5' UTR

AGGAACGGAAGTTTGGCGGGAACCCGGATTCCCAGGTTTCAGGCCTCTCAAGGGTGGAGCGGAATA
GAGGGAAACAGGCCACCATCTCCTCGATCTACAGACTACACTTGGAAACACAAACAATATAAAT
ATCTGAAGACCCACGTGGGACCTGAAGAATGGCCTATTAC

Coding region (shorter form only)

ATGGATACATGGGCGGCAGCTCCCGCCGAAAGACCAGCCAACAATTCTCTTGAAGAACATTATAG
ATGGCAAATTCCCATTAAACACAATGTCTTCGAAATTTTAAAGAGCAATGAGAGTCAGCTATGTGA
AGTCCTCCAAAATAAGTTTGGATGCATCTCTACCCTGAGCTGTCCAACCTTAGCAGGGAGCAGCTC
TCCTGCTCAGAGAGTCTTCAGAAGGACCCTGATCCCTGGGATAGAGTTATCTGTCTGGAAGGATGA
CCTTACCAGACACGTTGTTGATGCTGTGGTGAACGCAGCCAATGAAAACCTTTTGCATGGAAGTGG
CCTGGCCGGAAGCTTGGTGAAAACCTGGTGGCTTTGAAATCCAAGAAGAGAGCAAAAGAATCATTG
CCAACGTTGGTAAATCTCAGTTGGTGGAAATCGCTATCACCGGTGCGGGGAGACTTCCTTGCCATT
TGATTATCCATGCGGTTGGACCTCGGTGGACAGTTACGAACAGCCAGACAGCTATCGAATTACTGA
AATTTGCCATTAGGAACATTCTAGATTATGTACCAAATATGATCTACGCATTAAGACAGTAGCAA
TTCCAGCCCTGAGCTCTGGAATTTTCCAGTTCCTCTGGATTTGTGTACAAGCATAATTTTAGAAAC
TATCCGGCTTTATTTCCAAGACAAGCAAATGTTTCGGTAATTTGAGAGAGATTTCATCTGGTGAGCAA
TGAGGACCCCACTGTTGCGTCTTTAAATCCGCCTCAGAAAGCATCCTAGGGAGGGACCTGAGCTC
TTGGGGGGGTCCAGAACTGACCCTGCTTCCACCATGACTCTTCGCATCGGCCGGGGCCTGACTCT
CCAGATTGTCCAAGGCTGTATTGAAATGCAAACAACAGATGTAATTGGTAATTCTGGATACATGCA
GGATTTTAAATCAGGACGAGTGGCACAGTCGATTCTTAGACAAGCAGGGGTGAAATGGAAAAGG
AACTTGACAAGGTTAACCTGTCCACAGATTATCAAGAGGTGTGGGTACAAAAAGGATTTAAATTGT
CCTGTCAAGTATGTCTTCCATGTGGCATGGCATTCCCAAATCAACAAATACCAGATATTGAAAGATG
CAATGAAGTCTGTCTAGAAAAATGCCTTAAACCAGATATAAATTCATTTCCTTTCTCTGCTCTCG
GGACAGGATTGATGGATTTGAAGAAGAGTACAGCAGCTCAGATAATGTTTGAGGAAGTTTTTGCA
TTTGCTAAAGAGCACAAGGAAAAACGCTAACTGTAAAGATTGTGATCTTTCCAGTAGATGTGGA
GACGTACAAGATTTTTTATGCTGAAATGACAAAAAGGTCCAACGAGCTGAATCTCAGCGGTAATA
GTGGTGCTTTAGCCCTGCAGTGGTCCAGTGGGGAGCAAAGAAGAGGCGGCCCTTGAAGCTGGATCT
CCTGCCATCAATCTCATGGGTGTAAAAGTGGGAGAGATGTGTGAGGCCAGGAATGGATTGAAAG
GTTGCTGGTCTCCCTGGACCACCACATCATTGAGAATAATCATATTCTCTATCTTGGGAAAAAGA
GCACGACGTGCTGTCTGAGCTCCAGACCAGCACAAGAGTCTCCATTTTCAGAGACTGTCAGTCCAA
GAACGGCCACTTTGGAGATTAAAGGTCCCCAGGCTGACCTCATTGACGCAGTTATGAGGATTGAAT
GTATGCTGTGTGACGTTTCAGGAAGAAGTGGCAGGAAAAAGGGAGAAAAATCTTTGGAGCTTGTC
GGACAGGGGACCAACCAGCAAGAAAACTGGATAAAATGGAAGAATCGTACACATTTCAACGAT
ACCCAGCATCATTAACCTCAGGAACCTCAGGACCGAAAGAAACAGTTTGAAAAGTGTGGCTTGTGG
GTTGTGCAGGTGGAGCAGATAGACAATAAGGTGCTGCTGGCTGCCTTCCAAGAGAAGAAGAAAT
GATGGAAGAGAGGACGCCAAAGGGATCTGGGAGCCAAAGGTTGTTTCAGCAGGTCCACATCAGT
TCTGCAATACGGTGTGCAGAGTCGGCTTCCACAGAATGTATTTCGACATCCTATAACCCAGTTTATG
GAGCCGGCATATATTTACCAAGAGCCTCAAAAATCTAGCAGACAAGGTCAAGAAAACCTCAAGC
ACAGACAAGCTAATCTATGTGTTTGAGGCAGAAGTACTCACAGGGTCCTTCTGTGAGGGTAATTCC
TCAAATATCATCCCTCCACCATTGAGTCTGGGGCCTTAGATGTCAATGACAGCGTAGTTGACAAT
GTTTCCAGCCCTGAAACCATTGTTGTTTTTAATGGCATGCAGGCCATGCCCCTGTACTTGTGGACTT
GCACACAGGATAGGACATTCTCACAGCATCCGATGTGGTACAGGACTACTCATCAGGACCAGGA
ATGGTCTCTTCGCTGCAGTCCTGGGAATGGGTCTTAAATGGCAGCTCTGTTTAG

3' UTR:

TGTCTACATCAGTTTAAACAAGCAGAAGGGGTGAGAGAAGTACAAAATGATAAATAACAGGTTA
CCTGTTTCAAGATGATGGGGTCACTAAAGGCACCGACCACACACTAGCATCATAGTGCCTTTGTCTT
TACCTCTGGGCTTGACTGGGCAGATGCCAGCTAAACTTCCTCACTGTCTT

Fig. 2

4/23

TTCTATTTGATATCTTTTCATCTCCTTTCTATAGGTGACAGCAAGAATACTTTATATAGAACAAGGA
TATTTTTTTTCAAGCCTGTTATTTTCTAAAATGATAGCACAACTAGGACAACAGGATGATTTTCAGG
TTTTCTATATAATTTATAAAGTGCTTTGGATATCCAAATAAATCACCTTTGTCTGAGT

BAL mouse protein (shorter form):

MDTWAAAPAERPANNNSLEEHYRWQIPIKHNVFEILKSNESQLCEVLQNKFGCISTLSCPTLAGSSS
PAQRVFRRTLIPGIELSVWKDDLTRHVVDVAVNAANENLLHGSGLAGSLVKTGGFEIQEESKRIIA
NVGKISVGGIAITGAGRLPCHLIHAVGPRWTVTNSQTAEILLKFAIRNILDYVTKYDLRIKTVAIPA
LSSGIFQFPLDLCTSIILETIRLYFQDKQMFNLRHLSVSNEDPTVASFKSASESILGRDLSSWGGP
ETDPASTMTLRIGRGLTLQIVQGCIEMQTTDVIGNSGYMQDFKSGRVAQSILRQAGVEMEKELDK
VNLSTDYQEVWVTKGFKLSCQYVFHVAWHSQINKYQILKDAMKSCLEKCLKPDINSISFPALGT
GLMDLKKSTAAQIMFEEVFAFAKEHKEKTLTVKIVIFPVDVETYKIFYAEMTKRSNELNLSGNSG
ALALQWSSGEQRRGGLAAGSPAINLMGVKVGEMCEAQEWIERLLVSLDHIIENNHILYLKKE
HDVLSELQTSTRVSISETVSPRTATLEIKGPQADLIDAVMRIECMLCDVQEEVAGKREKNLWSLS
GQGTNQEKLDKMEESYTFQRYPASLTQELQDRKKQFEKCGLWVVQVEQIDNKVLLAAAFQE K
KKMMEERTPKGSGSQRLFQQVPHQFCNTVCRVGFHRMYSTSYNPVYGAGIYFTKSLKNLADKV
KKTSTDKLIYVFEAEVLTGSFCQGNSSNIIPPLSPGALDVNDSVVDNVSSPETIVVFNGMQAMP
LYLWTCTQDRTF SQHPMWSQDYSSGPGMVSSLQSEWVVLNGSSV

Fig. 2 (continued)

5/23

>_ BAL Human protein 819 aa vs.
 >_ BAL Mouse protein 826 aa
 scoring matrix: , gap penalties: -12/-2
 61.5% identity; Global alignment score: 3158

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      10      20      30      40      50      60
610015 MDFSMVAGAAAYNEKSETGALGENYSWQIPINHNDFKILKNNERQLCEVLQNKFGCISTL
      :: . ::: :. .... :: : ::::: : ::::: : ::::: : ::::: :
      MD----TWAAAPAERPANNSLEEHRWQIPIKHNVFEILKSNESQLCEVLQNKFGCISTL
      10      20      30      40      50

      70      80      90     100     110
610015 VSPVQEGNSKSLQ-VFRKMLTPRIELSVWKDDLTTTHAVDAVNANEDLLHGGGLALALV
      :. .... : :::: : : ::::: : ::::: : ::::: : ::::: : ::::: :
      SCPTLAGSSSPAQRVFRRTLIPGIELSVWKDDLTRHVVDVNANENLLHGSGLAGSLV
      60      70      80      90     100     110

      120     130     140     150     160     170
610015 KAGGFEIQEESKQFVARYGKVSAGEIAVTGAGRLPCKQIIHAVGPRWMEWDKQGCTGKLQ
      : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      KTGGFEIQEESKRIIANVGKISVGGIAITGAGRLPCHLIHAVGPRWTVTNSQTAEILLK
      120     130     140     150     160     170

      180     190     200     210     220     230
610015 RAIVSILNYVIYKNTHIKTVAIPALSSGIFQFPLNLCTKTIVETIRVSLQKPMMSNLKE
      :: : ::::: . ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      FAIRNILDYVTKYDLRIKTVAIPALSSGIFQFPLDLCTSIILETIRLYFQDKQMFGNLR
      180     190     200     210     220     230

      240     250     260     270     280     290
610015 IHLVSNEEDPTVAAFKAASEFILGK---SELGQETTP--SFNAMVNNLTQIVQGHIEWQ
      : ::::: : ::::: : : : : : : : : : : : : : : : : : : : : : :
      IHLVSNEEDPTVASFKSASESILGRDLSSWGGPETDPASTMTLRIGRGLTLQIVQGCIEMQ
      240     250     260     270     280     290

      300     310     320     330     340     350
610015 TADVIVNSVNPHTITVGPVAKSILQQAGVEMKSEFLATKAKQFQRSQLVLVTGKGNLFCK
      : ::::: : :. : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      TTDVIGNSGYMQDFKSGRVAQSILRQAGVEMEKEL--DKVNLSTDYQEVWVTGFKLSCQ
      300     310     320     330     340     350

      360     370     380     390     400     410
610015 YIYHVLWHSEFPKPQILKHAMKECLEKCIEQNITSISFPALGTGNMEIKKETAAEILFDE
      : ::::: : :. : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      YVFHVAWHSQINKYQILKDAMKSCLEKCLKPDINSISFPALGTGLMDLKKSTAAQIMFEE
      360     370     380     390     400     410

      420     430     440     450     460     470
610015 VLTFAKDHVKHQLTVKFVIFPTDLEIYKAFSSEMAKRSKMLSLNNYS---VPQSTREEKR
      : ::::: : :. : ::::: : ::::: : ::::: : ::::: : ::::: : ::::: :
      VFVFAKEHKEKTLTVKIVIFPVDVETYKIFYAEMTKRSNELNLSGNSGALALQWSSGEQR
      420     430     440     450     460     470

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Fig. 3

SUBSTITUTE SHEET (RULE 26)

	480	490	500	510	520	530
610015	ENGLEARS	PAINLMGF	NVEEMYE	AHAWIQ	RILSLQ	NHHIENN

	RGGLEAG	SPAINLM	GVKVGEM	CEAQEW	IERLLV	SLDHHIENN
	480	490	500	510	520	530
	540	550	560	570	580	590
610015	KTSSVS	SITEIIS	PGRTELE	IEGARAD	LIEVVM	NIEDMLCK

	TSTRVSI	SETVSP	RATATLE	IKGPQAD	LIDAVM	RIECMLCD
	540	550	560	570	580	590
	600	610	620	630	640	650
610015	TIQQOK	TQDEMKE	NIIFLKC	PVPPTQ	ELLDQK	KQFEKCG
	:
	TNQOEKL	-DKMEES	YTFQRY	PASLTQ	ELODRK	KQFEKCG
	600	610	620	630	640	650
	660	670	680	690	700	710
610015	KKMMEEK	LHRQPV	SHRLFQ	QVPYQF	CNVVCR	VGFQRM

	KKMMEER	TPKSGS	QRLRFQ	QVPHQF	CNTVCR	VGFHRM
	660	670	680	690	700	710
	720	730	740	750	760	770
610015	EKAKKIS	AADKLI	YVFEEV	LTGFFC	QGHPLN	IVPPPL

	DKVKKTS	SSTDKLI	YVFEEV	LTGSFC	QGNSSN	IIPPLSP
	720	730	740	750	760	770
	780	790	800	810		
610015	IFSGMQ	AIPOYL	WTCTQE	--YVQ---	SQDYSS	SGPMRP

	VFNGMQ	AMPLYL	WTCTQD	RTFSSQ	HPMWSQ	DYSSGPM
	780	790	800	810	820	

Fig. 3 (continued)

7/23

Comparison of:

(A) 7486572155.52.67.361 > BAL Human

3244n

(B) 7486572155.52.67.362 > BAL Mouse

3024n

using matrix file: DNA, gap penalties: -16/-4

71.7% identity in 2916 nt overlap; score: 5444

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      370      380      390      400      410      420
- CCCTACAAGTGCTCAGAGACTGGTGCTCTTGGAGAAAACATAGTTGGCAAATTCCCATT
  ::: : : : :: : : : : : : : : : : : : : : : : : : : : : : : :
- CCCGCCGAAAGACCAGCCAACAATTCTCTTGAAGAACATTATAGATGGCAAATTCCCATT
      200      210      220      230      240      250

      430      440      450      460      470      480
- AACCACAATGACTTCAAAATTTTAAAAATAATGAGCGTCAGCTGTGTGAAGTCCTCCAG
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
- AAACACAATGTCTTCGAAATTTTAAAGAGCAATGAGAGTCAGCTATGTGAAGTCCTCCAA
      260      270      280      290      300      310

      490      500      510      520      530      540
- AATAAGTTTGGCTGTATCTCTACCCCTGGTCTCTCCAGTTCAGGAAGGCAACAGCAAATCT
  : : : : : : : : : : : : : : : : : : : : : : : : : : : : :
- AATAAGTTTGGATGCATCTCTACCCCTGAGCTGTCCAACCTCTAGCAGGGAGCAGCTCTCCT
      320      330      340      350      360      370

      550      560      570      580      590      600
- CTGCA---AGTGTTTCAGAAAAATGCTGACTCCTAGGATAGAGTTATCAGTCTGGAAAGAT
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : :
- GCTCAGAGAGTCTTCAGAAGGACCCTGATCCCTGGGATAGAGTTATCTGTCTGGAAGGAT
      380      390      400      410      420      430

      610      620      630      640      650      660
- GACCTCACCACACATGCTGTTGATGCTGTGGTGAATGCAGCCAATGAAGATCTTCTGCAT
  : : : : : : : : : : : : : : : : : : : : : : : : : : : :
- GACCTTACCAGACACGTTGTTGATGCTGTGGTGAACGCAGCCAATGAAAACCTTTTGCAT
      440      450      460      470      480      490

      670      680      690      700      710      720
- GGGGGAGGCCTGGCCCTGGCCCTGGTAAAAGCTGGTGGATTGAAATCCAAGAAGAGAGC
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : :
- GGAAGTGGCCTGGCCGGAACCTTGGTGAAAACCTGGTGGCTTTGAAATCCAAGAAGAGAGC
      500      510      520      530      540      550

      730      740      750      760      770      780
- AAACAGTTTGTGTCAGATATGGTAAAGTGTCAGCTGGTGAGATAGCTGTACGGGAGCA
  :: : : : : : : : : : : : : : : : : : : : : : : : : : : :
- AAAAGAATCATTGCCAACGTTGGTAAAATCTCAGTTGGTGGAATCGCTATCACCGGTGCG
      560      570      580      590      600      610

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Fig. 4

SUBSTITUTE SHEET (RULE 26)

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1720 1730 1740 1750 1760 1770
CCCCAGTCAACCAGAGAGGAGAAAAAGAGAAAATGGGCTTGAAGCTAGATCTCCTGCCATC
: : ::
CTGCAGTGGTCCAGTGGGGAGCAAAGAAGAGCGGCCTTGAAGCTGGATCTCCTGCCATC
1570 1580 1590 1600 1610 1620

1780 1790 1800 1810 1820 1830
AATCTGATGGGATTCAACGTGGAAGAGATGTAGTGAGGCCCACGCATGGATCCAAAGAAT
:
AATCTCATGGGTGTAAAGTGGGAGAGATGT-GTGAGGCCCAGGAATGGATTGAAAGGTT
1630 1640 1650 1660 1670 1680

1840 1850 1860 1870 1880 1890
CCTGAGTCTCCAGAACCACCACATCATTGAGAATAATCATATTCTGTACCTGGGAGAAA
:
GCTGGTCTCCCTGGACCACCACATCATTGAGAATAATCATATTCTCTATCTTGGGAAAAA
1690 1700 1710 1720 1730 1740

1900 1910 1920 1930 1940 1950
GGAACATGACATTTTGTCTCAGCTTCAGAAAAC TTCAAGTGTCTCCATCACAGAAATTAT
:
AGAGCACGACGTGCTGTCTGAGCTCCAGACCAGCACAAAGAGTCTCCATTT CAGAGACTGT
1750 1760 1770 1780 1790 1800

1960 1970 1980 1990 2000 2010
CAGCCCAGGAAGGACAGAGTTAGAGATTGAAGGAGCCCGGGCTGACCTCATTGAGGTGGT
:
CAGTCCAAGAACGGCCACTTTGGAGATTAAAGGTCCCAGGCTGACCTCATTGACGCAGT
1810 1820 1830 1840 1850 1860

2020 2030 2040 2050 2060 2070
TATGAACATTGAAGATATGCTTTGTAAAGTACAGGAGGAAATGGCAAGGAAAAAGGAGCG
:
TATGAGGATTGAATGTATGCTGTGTGACGTT CAGGAAGAAGTGGCAGGAAAAAGGGAGAA
1870 1880 1890 1900 1910 1920

2080 2090 2100 2110 2120 2130
AGGCCTTTGGCGCTCGTTAGGACAGTGGACTATT CAGCAACAAAAACCCAAGACGAAAT
:
AAATCTTTGGAGCTTGTCAGGACAGGGGACCAACCAGCAAGAAAA---CTGGATAAAAT
1930 1940 1950 1960 1970 1980

2140 2150 2160 2170 2180 2190
GAAAGAAAATATCATATTTCTGAAATGTCCTGTGCCTCCA ACTCAAGAGCTTCTAGATCA
:
GGAAGAATCGTACACATTTCAACGATACCCAGCATCATTA ACTCAGGAAC TTCAGGACCG
1990 2000 2010 2020 2030 2040

Fig. 4 (continued)

2200 2210 2220 2230 2240 2250
AAAGAAACAGTTTGA AAAAATGTGGTTTG CAGGTTCTAAAGGTGGAGAAGATAGACAATGA
:::
AAAGAAACAGTTTGA AAGTGTGGCTTG TGGGTTGTGCAGGTGGAGCAGATAGACAATAA
2050 2060 2070 2080 2090 2100

2260 2270 2280 2290 2300 2310
GGTCCTTATGGCTGCCTTTCAAAGAAAGAAGAAAATGATGGAAGAAAAACTGCACAGGCCA
::: ::
GGTGTCTGCTGGCTGCCTTCCAAGAGAAGAAGAAAATGATGGAAGAGAGGACGCCAAAGGG
2110 2120 2130 2140 2150 2160

2320 2330 2340 2350 2360 2370
ACCTGTGAGCCATAGGCTGTTTTCA GCAAGTCCCATACCAGTTCTGCAATGTGGTATGCAG
: :::
ATCTGGGAGCCAAAGGTTGTTTTCA GCAGGTCCCACATCAGTTCTGCAATACGGTGTGCAG
2170 2180 2190 2200 2210 2220

2380 2390 2400 2410 2420 2430
AGTTGGCTTTCAAAGAATGTACTCGACACCTTGCGATCCAAAATACGGAGCTGGCATATA
:::
AGTCGGCTTCCACAGAATGTATTTCGACATCCTATAACCCAGTTTATGGAGCCGGCATATA
2230 2240 2250 2260 2270 2280

2440 2450 2460 2470 2480 2490
CTTCACCAAGAACCTCAAAAACCTGGCAGAGAAGGCCAAGAAAATCTCTGCTGCAGATAA
:
TTTCACCAAGAGCCTCAAAAATCTAGCAGACAAGGTCAAGAAAACCTCAAGCACAGACAA
2290 2300 2310 2320 2330 2340

2500 2510 2520 2530 2540 2550
GCTGATCTATGTGTTTGAGGCTGAAGTACTCACAGGCTTCTTCTGCCAGGGACATCCGTT
:::
GCTAATCTATGTGTTTGAGGCAGAAGTACTCACAGGCTCCTTCTGTGTCAGGGTAATTCCTC
2350 2360 2370 2380 2390 2400

2560 2570 2580 2590 2600 2610
AAATATTGTTCCCCCACCCTGAGTCCTGGAGCTATAGATGGTCATGACAGTGTGGTTGA
:
AAATATCATCCCTCCACCATTGAGTCCTGGGGCCTTAGATGTCAATGACAGCGTAGTTGA
2410 2420 2430 2440 2450 2460

2620 2630 2640 2650 2660 2670
CAATGTCTCCAGCCCTGAAACCTTTGTTATTTTTAGTGGCATGCAGGCTATACCTCAGTA
:
CAATGTTTCCAGCCCTGAAACCATTGTTGTTTTAATGGCATGCAGGCCATGCCCTGTA
2470 2480 2490 2500 2510 2520

Fig. 4 (continued)

[illegible]

Fig. 4 (continued)

```

3080      3090      3100      3110      3120      3130
CATATAATGAAGAAATTTTCTAGTATATAACGCAGGCCCTTTATTCTCTAAAATGATGA
::: :: : :: ::::: : :: :::: ::::: :::::
TATAGAACAAGGATATTTTCTT-----CAAGCCTGTTATTCTCTAAAATGA---
2890      2900      2910      2920      2930

3140      3150      3160      3170      3180      3190
TAGTATAAAAATGTTAGGATAACAGAATGATTTTAGATTTTCCAGAGAATATTATAAAGT
::: : :::: ::::: ::::: ::::: ::::: : : ::::: :::::
TAGCACAAAC----TAGGACAACAGGATGATTTTCAGGTTTCTATATAAT-TTATAAAGT
2940      2950      2960      2970      2980

3200      3210      3220      3230
GCTTTAGGTATGAAAAATAAATCATCTTTGTCTGATT
::::: : :::: ::::: ::::: ::::: :
GCTTTGGATATCCAAATAAATCACCTTTGTCTGAGT
2990      3000      3010      3020

```

Fig. 4 (continued)

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Fig. 5

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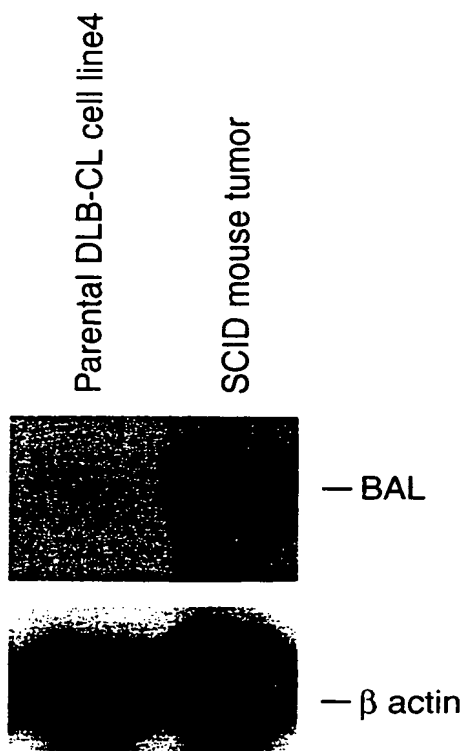


Fig. 6

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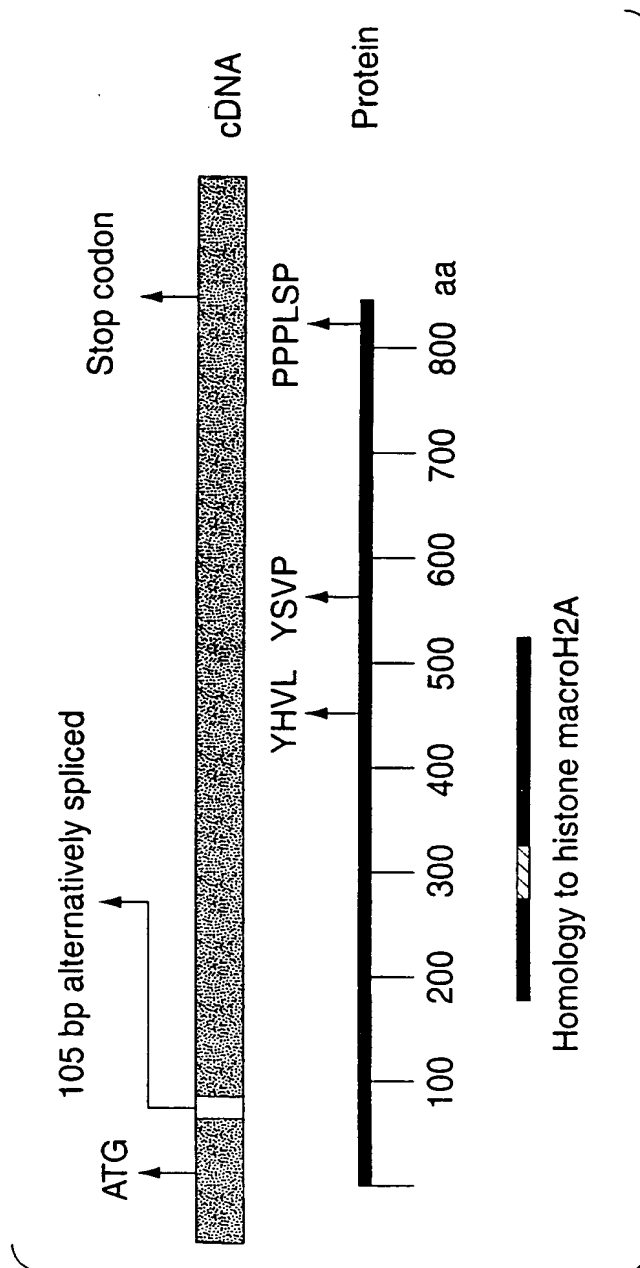


Fig. 7

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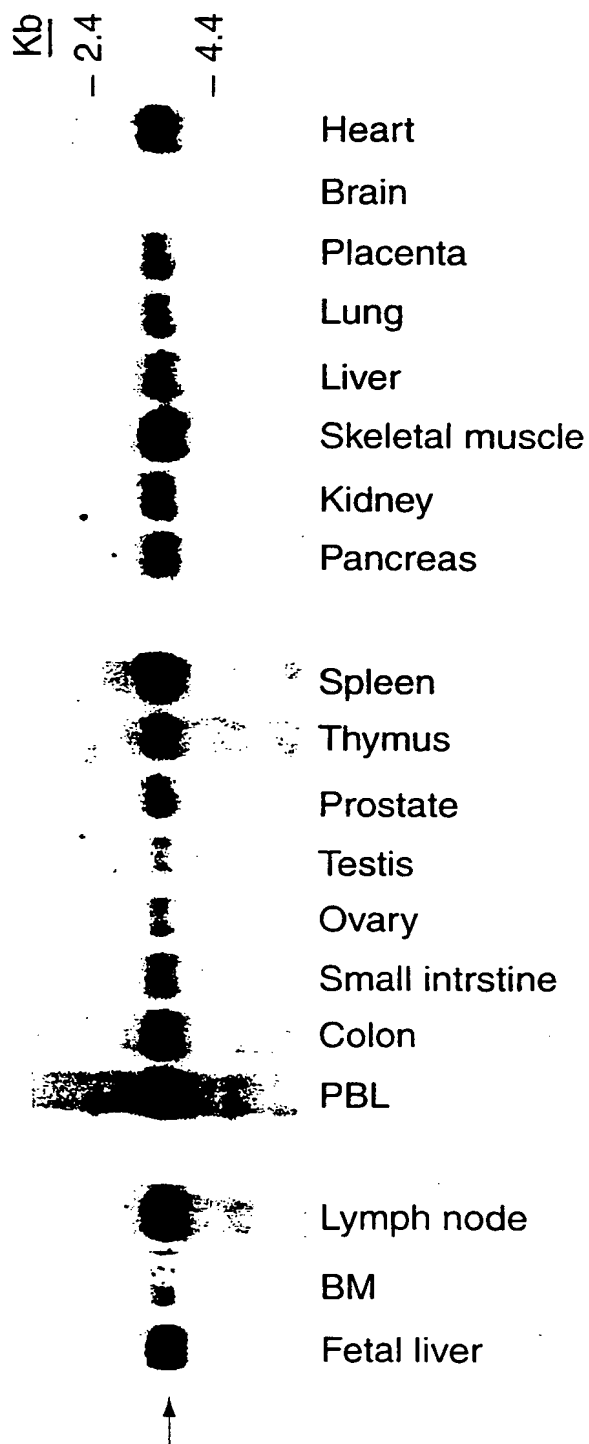


Fig. 8

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Fig. 9

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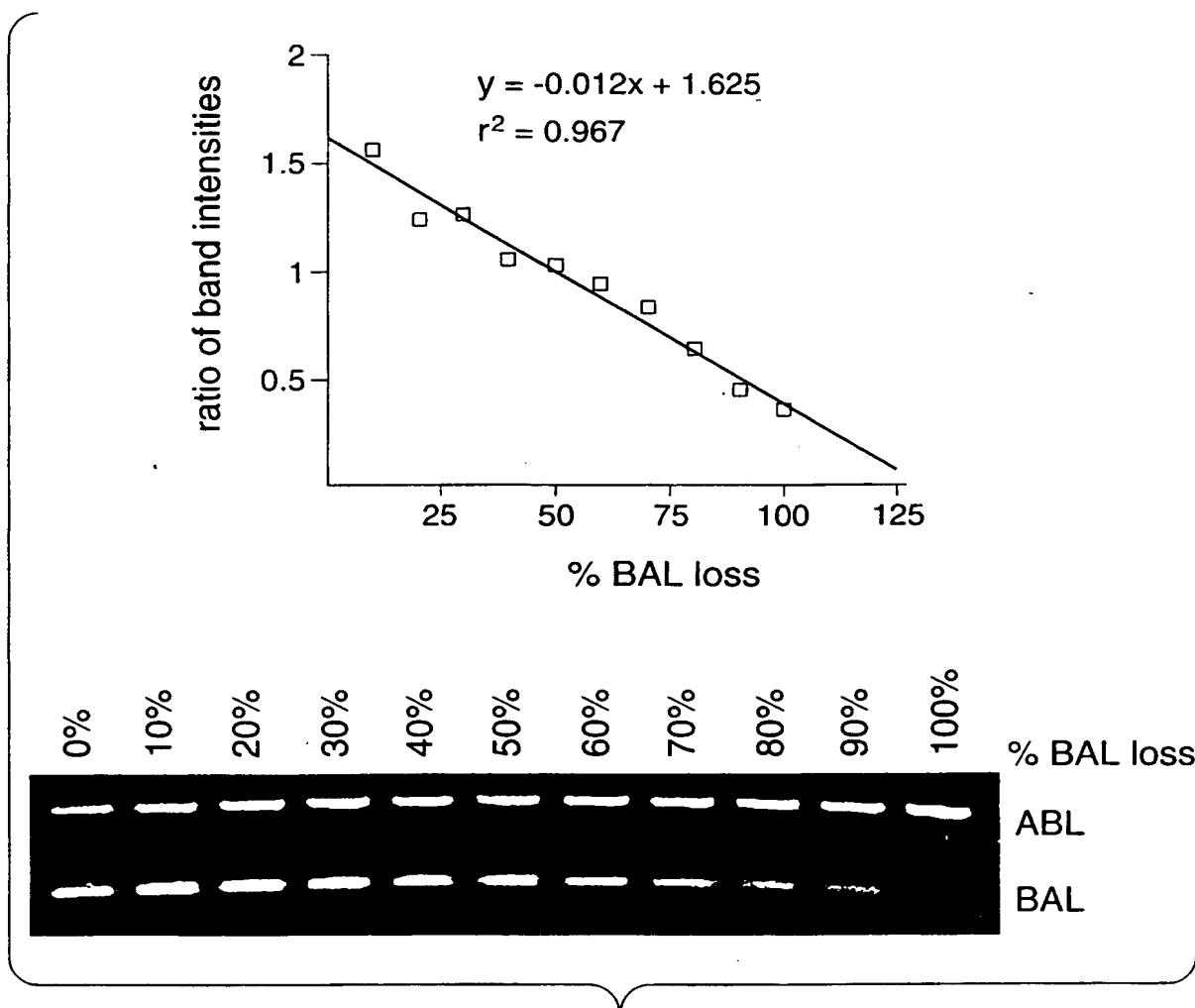


Fig. 10

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2
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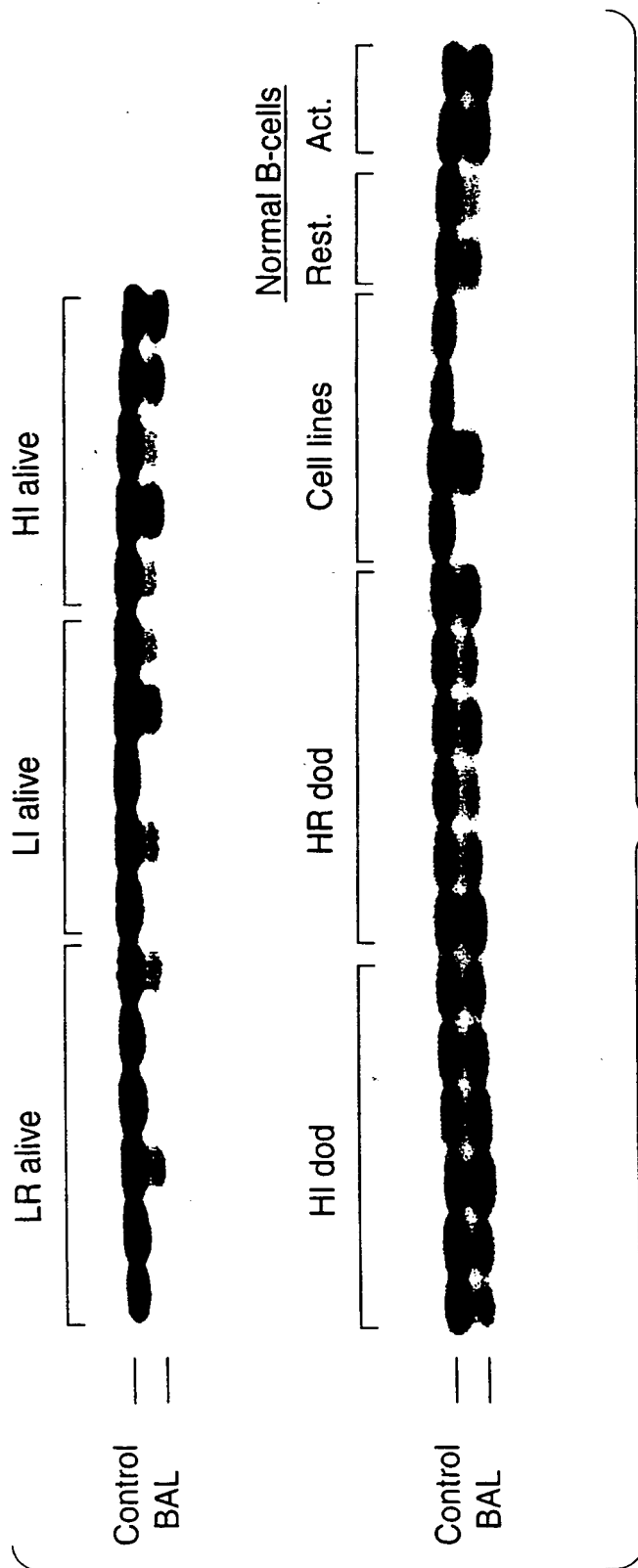


Fig. 11

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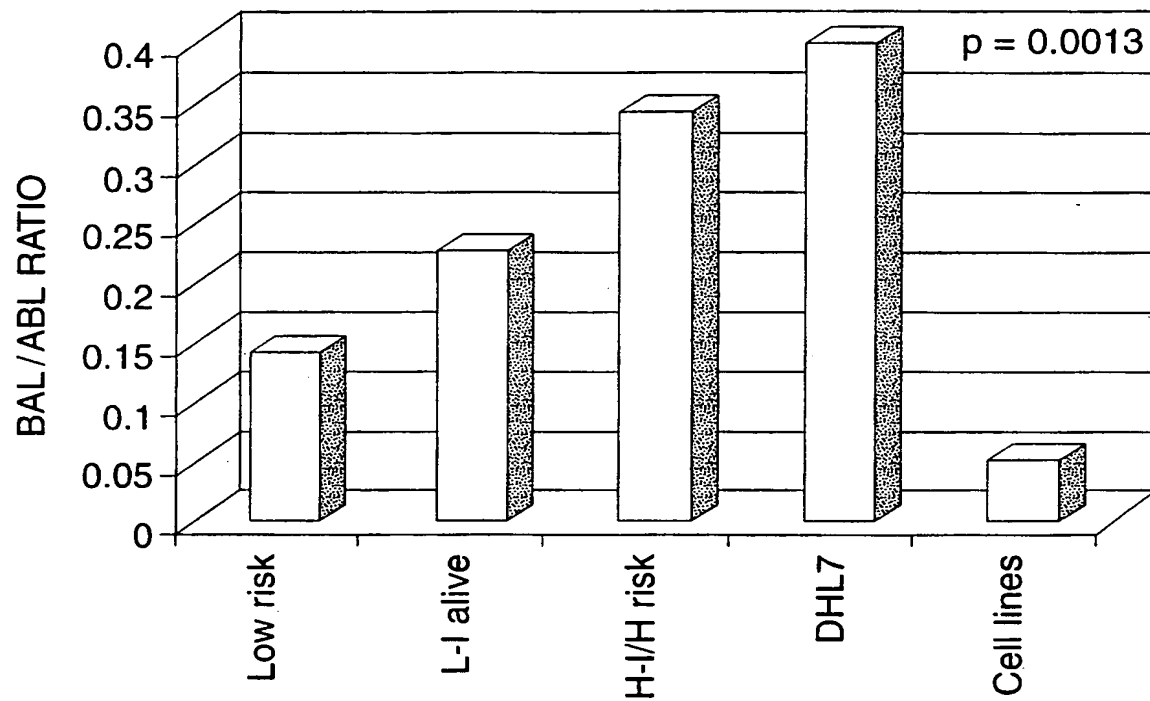


Fig. 12

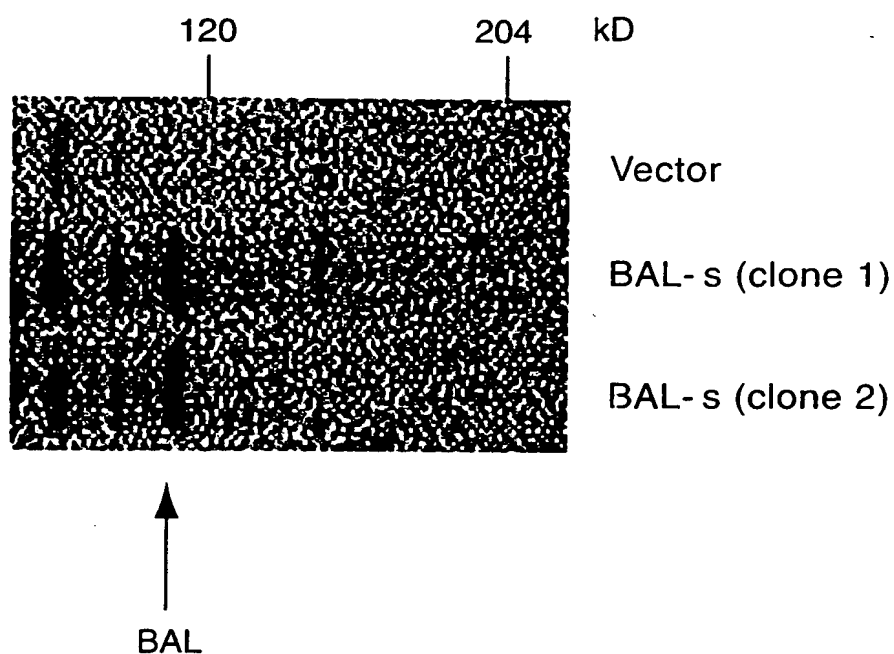


Fig. 13

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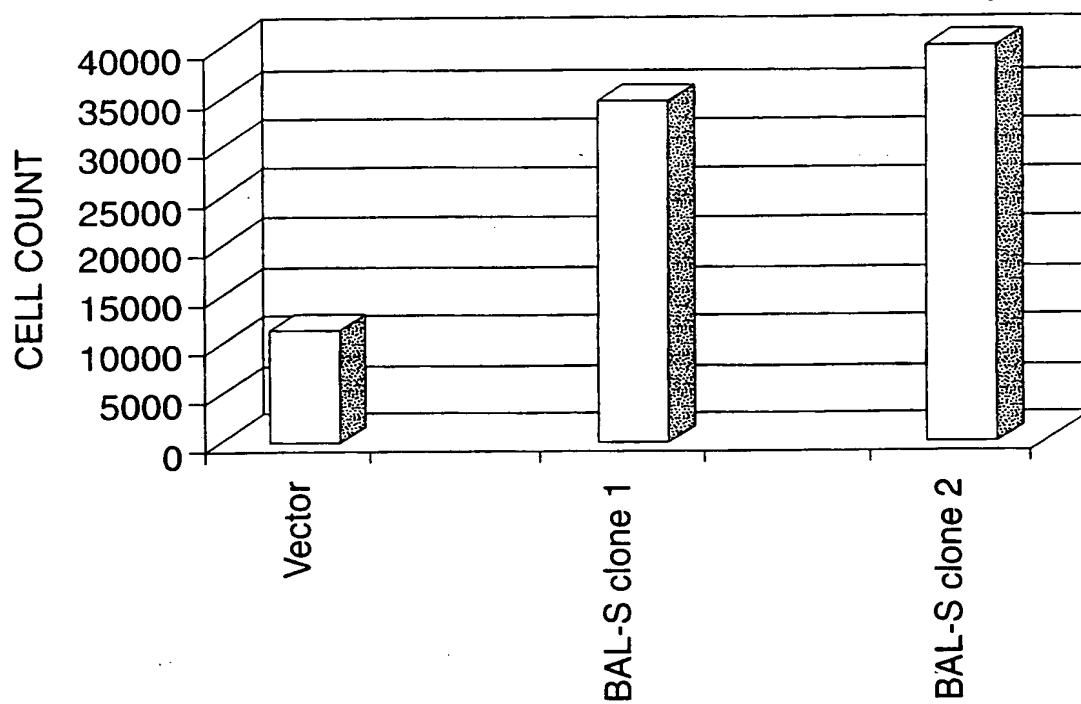


Fig. 14